



SANDIA LOADING TEAM, responsible for loading the SNAP 27 plutonium 238 fuel capsule on the LM of Apollo 12, included (from front) Al Stephenson (9521), team leader; Jim Leonard (9521), SNAP 27 technical director; Bob Wemple (9511); and Carl Sisson (1543). Not shown are team members Bob Pace and Watson Snyder (both 7233). The SNAP 27 powers an array of scientific instruments which the Apollo 12 astronauts left on the moon.

Mixed-up Atoms

Ceramics Process Aids Ferroelectrics

A method of atomically mixing materials for use in lead-zirconate-titanate (ferroelectric) ceramics has been devised by the Active Ceramics Materials Division 2317. The process makes possible a ceramic with fewer impurities and better electrical properties.

Principal developers of the ceramics precursor, or pre-ceramic materials process, are Jim Hesse and Paul Wilcox. Technical aid has come from staff assistant Bob Brooks and theoretical assistance from division supervisor Gene Haertling. Although the specific process used here was developed exclusively by these Sandians, some parallel investigation has been carried on by other agencies.

Essentially, the process uses hydrolysis—a chemical reaction at the atomic level—rather than the conventional mechanical blending of the constituents of ferroelectric ceramics.

Metal chlorides of zirconium, titanium, and niobium are combined with alcohol and gaseous ammonia, forming ammonium chloride and metal alkoxides. The ammonium chloride is then filtered out, leaving concentrated metal alkoxide residues. At this point lead alkoxides are introduced and when the compound is mixed with water hydrolysis occurs. The mixture is then filtered, freeze-dried, and calcined (a heat treatment); later it is hot pressed or

conventionally sintered to become the ferroelectric ceramic.

The pre-ceramic powdered material is exceptionally pure and can be hot pressed or sintered at considerably lower temperatures. Impurities in the mixtures can be kept to below 500 parts per million. With conventional processes, impurity levels may be 10 to 100 times higher.

Less lead is boiled off during the hot press operation because lower temperatures

and pressures are used. Excessive loss of lead is a major problem in conventionally derived materials.

"This process has possible important application in the fabrication of capacitors for high energy storage," says Gene Haertling, 2317 supervisor. The process is applicable to a wide variety of ceramic materials and substrates where small particles and intimate mixing prior to ceramic firing are essential.



BUBBLE MACHINE? No, it's a rotary evaporator used to concentrate pre-ceramic materials in a ferroelectric ceramics process. Developers of the process, are, left, Paul Wilcox and Jim Hesse (both 2317).

Photo Contest Deadline Is Dec. 12

Entries are beginning to come into the LAB NEWS office for the first Sandia photo contest. Deadline for submitting entries is Friday, Dec. 12. Open to Sandia and AEC employees, the contest offers cash prizes for winners, publication in the LAB NEWS, and display in the lobby of Bldg. 802.

A number of people have asked about submitting more than one photo in the two categories. Multiple (as many as five photos in each category) entries may be submitted by an individual photographer.

Professionals are not eligible to enter.

The two categories are (1) people and abstracts and (2) animals and scenics. Awards of \$25, \$15 and \$10 will be made for first, second and third place winners in each category. Only black and white photos in sizes no smaller than five by seven inches will be considered.

At Sandia Laboratories in Albuquerque, submit entries to the LAB NEWS office, Bldg. 802, Rm. 133. At Livermore, submit entries to Division 8216, MO4.

Transit RTG

Sandia Providing Technical Direction For New Space Isotopic Generator

Work is now moving into phase two development for a new Transit RTG (Radioisotopic Thermoelectric Generator) at TRW Systems at Redondo Beach, Calif. under the technical direction of Sandia Laboratories. The new generator will provide 30 watts of electrical power for five years for U.S. Navy Transit navigational satellites. Four of the Transit satellites, now powered by solar cells, are in orbit.

It is anticipated that the current satellites will be replaced by the RTG model. The RTG is intended to provide a longer-lived, more reliable power source and will enable the satellite to maintain a more consistent orbit. Extended arms to support solar cells will be eliminated, reducing the total surface area of the satellite.

Weight of the new power source will be approximately 30 pounds. The fuel, plutonium 238, will be protected by a refractory metal capsule and graphite ablation material which will keep the capsule intact under abort or reentry conditions. Expected delivery date of a prototype unit is September 1970.

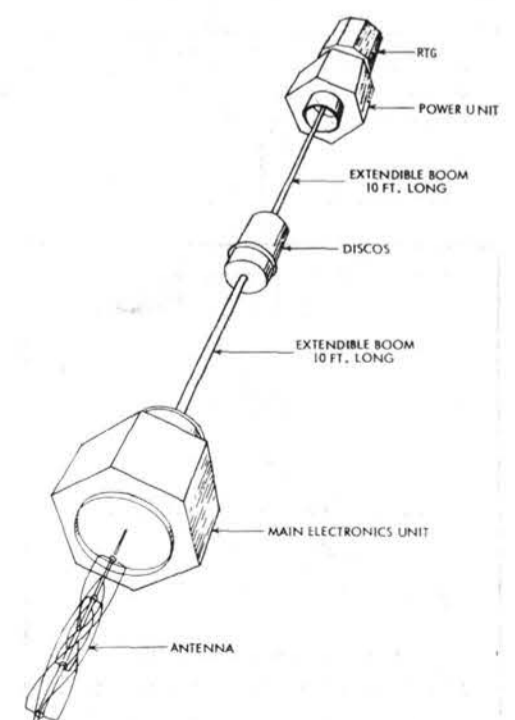
Denny Krenz of Isotopic Power Systems Division 9521 is the Sandia project director. TRW Systems is developing the Transit RTG after completing the preliminary proposal study.

Administration of the project is the responsibility of AEC/ALO Space and Special Programs Division under Bill Colston, director.

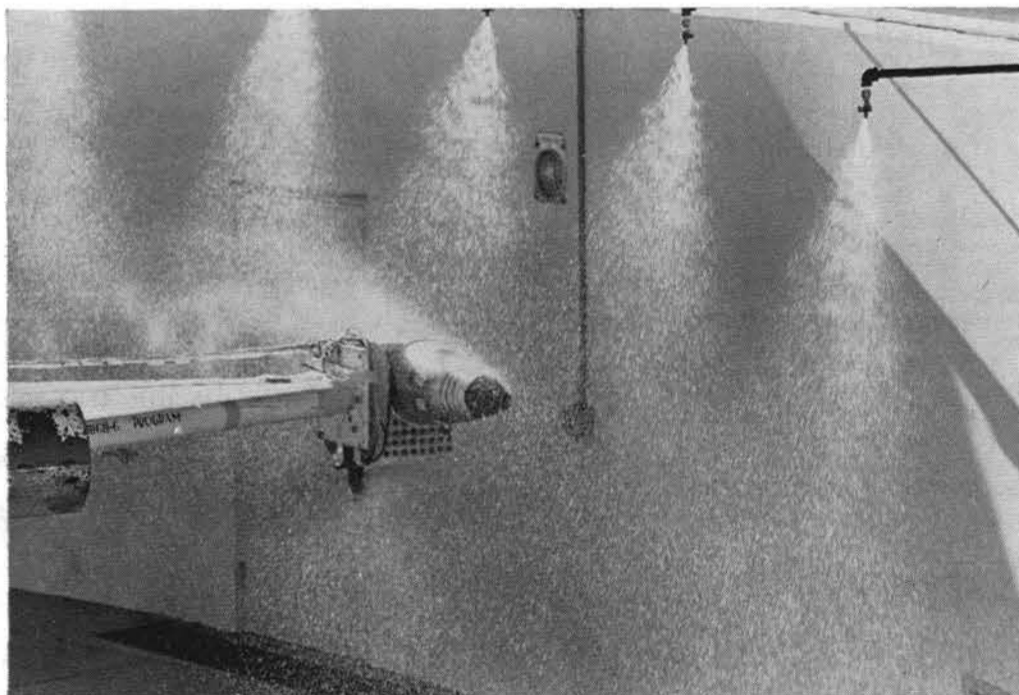
Other Sandians of Division 9521 who have technical direction responsibilities in the program include Bob Luikens, converter design and integration of the RTG system with the satellite; Don Johnson, fuel capsule design and production; and Floyd McFarling, heat source design and testing

plus handling and shipping equipment. Bob Seiber of Procurement Division E 4316 is assisting with fiscal management of the program.

The Aerospace Nuclear Safety Department 9510 safety advisor is Bob Cranfill.



ARTIST'S SKETCH shows the orbit configuration of Transit RTG satellite. Antenna points toward earth. The radioisotopic generator is at the top.



NEW TWIST FOR AN OLD TEST—Division 7324 environmental testing engineers have put a new twist on an old environmental testing technique by mounting a sprinkler system over the Labs' 35-foot-radius centrifuge to produce an artificial rainfall. A test item such as a nose cone is mounted on the centrifuge and rotated through the downpour at high speed, thus simulating the passage of a missile through a rainstorm. Sprinklers have previously been used in conjunction with Sandia rocket sled tests of nose cones, but this is the first time they have been used on centrifuge tests. One advantage of the new technique is that test velocities can be readily increased or decreased. Maximum tip velocity achieved is 290 mph.

New Constitution Up To Voters



When New Mexico voters accept or reject a new constitution on Dec 9 they will be deciding upon some important issues including the Bill of Rights, education, the elective franchise, and pollution.

Article II — the Bill of Rights — differs from the present constitution in at least four important respects: it includes a section

on the right to peaceable assembly and petition, affirms the right to bear arms "for security and defense, for lawful hunting and recreation use," limits the use of wiretap, and assures equality in education regardless of race.

The inclusion of a section on the right to bear arms was the result of strong concern expressed by many individuals and groups following the recent controversy over gun registration.

The section on assembly and petition does not expand rights now offered under the U.S. Bill of Rights nor can it, by law, offer less. However, convention delegates apparently felt its inclusion was an essential reaffirmation.

An extension of the search and seizure section of the Bill of Rights prohibits the interception of any communication without a proper warrant. Aimed specifically at wiretapping, the section requires that a warrant describe "the place to be searched, the persons or things to be seized, or the communication to be intercepted" and there must be "a written showing of probable cause, supported by oath or affirmation."

Section 22 of the Bill of Rights prohibits discrimination in public schools. The original constitution forbade school discrimination against children of Spanish descent. The proposed constitution assures the right and privilege of admission and attendance



in the public schools, whatever the race of the children.

Provisions in the Education Article (VIII) were the subject of some of the more heated sessions of the convention. The issue of aid to non-public schools was hotly debated before it was decided to retain the language of the present constitution which, as now interpreted, allows public money to be used to provide school lunches, textbooks, and transportation for students at non-public schools.

A second provision that received considerable debate would make members of the State Board of Education appointed rather than elected. The state board would direct, supervise and coordinate all public schools; control the budgets and expenditure of funds by schools and recommend levels of financial support; determine public school and vocational educational policy, and appoint a superintendent of public instruction to be the head of the State Department of Education. Appointive (by the Governor) rather than elective positions on the board have been included in an effort to strengthen the Department of Education.

The Education Article also calls for bilingual and bi-cultural educational programs in order to assure equal opportunity for all students and to preserve the diverse

cultural and linguistic heritage of the state.

Under the proposed constitution, the membership of the state boards of regents is expanded from five to seven members.

An article which should be of interest to the youth of New Mexico — Article VII — would lower the voting age from 21 to 20. Although many delegates wanted the age lowered to 18, the compromise age of 20 was settled on partly to determine the interest of young people in voting. No changes are made in residency requirements for voting in Presidential elections. The article also calls for absentee voting to be established by the legislature.

What in the long run may be the most important feature of the proposed constitution (assuming it is ratified) is the Constitutional Revision Article XII. This article is aimed at making the revision of the constitution easier. A criticism of the present constitution is that several of the articles required three-fourths of those voting on the question in the entire state and two-thirds of those voting in each county to approve an amendment before it can become effective. Although the two-thirds provision has been struck down by the courts, the three-fourths majority requirement remains in effect. The proposed article would only require the approval of a majority of voters in the entire state in order to amend the constitution. More importantly, the provision calls for amendment article by article rather than the present section by section method, an arrangement that has led to piecemeal and often conflicting amendments.

In addition, Article XII provides that the legislature may, at any time and by a two-thirds vote of all members of each house, call a constitutional convention to revise or amend the constitution. Even if the legislature does not call for such a convention, the question "Shall there be a constitutional convention?" will be placed on the ballot of the general election of 1984 and every 14 years thereafter.

A section in the Miscellaneous Article XI is sure to appeal to conservationists and others concerned with the pollution of water and air. The section, entitled "Protection of Environment" provides that "The protection of the state's beautiful and healthful environment is hereby declared to be of fundamental importance to the public health and safety and the general welfare. The legislature shall provide for control of pollution and control of despoilment of the air, water and other natural resources of this state, consistent with the use and development of these resources for the maximum benefit of the people." Thus it would be up to the legislature to provide specific anti-pollution statutes and to set up the mechanism for enforcement. The passage "consistent with the use and development" is meant to insure that extreme anti-pollution laws, which would discourage industrial development, not be passed.

NEXT: local government and finance.



DEEP CUT over right eye and damaged safety glasses were the result of a mishap on Veterans Day when Dick Vivian (1611) was hit by a golf ball.

Safety Lenses Prevent Injury on Golf Course

Dick Vivian (1611) has worn prescription glasses with tempered ("safety") lenses for about 10 years. He went to the extra personal expense because he likes to shoot and ski and felt he wanted the additional protection for his eyes. It has paid off.

On Veteran's Day, Dick and his son played golf at Arroyo del Oso course. The fourth hole is a short one and when the course is crowded — as it was — the foursome on the green customarily motions for the foursome behind them to hit up.

"I was watching," Dick says, "but there where white clouds in the sky which made the white ball hard to see. I heard it coming and then there was a white blur."

The ball hit the right lens of Dick's glasses. The impact knocked the lens out of the frame, broke the plastic part of the frame and bent the metal part. The rounded edge of the lens gouged a deep cut above his eye, but there was no other injury.

As might be expected of a golfer, Dick went ahead and finished his game.

Sandia's Safety Engineering Department is recommending Dick for membership in the Wise Owl Club of America — the organization of persons whose eyesight may have been saved by wearing safety glasses.



AND THAT'S HOW WE DO IT, says Elbert Mathias (4211) to visiting industrial arts and secondary school vocational teachers during a recent tour of Sandia's Development Shops. About 60 teachers from around the state were included in the tour during the Teacher's Convention. The teachers were taken through the General Machine Shop, the Apprentice Machine Shop, the Electronic Fabrication Shop, and the Pattern Shop.

Death



Mary Placek, secretary to Product Acceptance Equipment Design Department 2450 died Nov. 15. She was 56.

She had worked at Sandia Laboratories since December 1954.

Survivors include her husband, Joe Placek (2432), and a married daughter.

Sympathy

To Howard Peacock (4613) for the death of his wife in Houston, Oct. 25.

To Gary Krieger (2315) for the death of his mother, Nov. 2.

Authors

R. R. Boade (1224), "Dynamic Compression of Porous Tungsten," Vol. 40, No. 9, JOURNAL OF APPLIED PHYSICS.

A. R. Champion (5153), "Electrical Response of Anodized Aluminum Layers to Shock-Wave Compression," Vol. 40, No. 9, JOURNAL OF APPLIED PHYSICS.

P. C. Lysne (5133), R. R. Boade (1224), C. M. Percival (5315), and O. E. Jones (5130), "Determination of Release Adiabats and Recentered Hugoniot Curves by Shock Reverberation Techniques," Vol. 40, No. 9, JOURNAL OF APPLIED PHYSICS.

antimatter



"Well, what can we do? After all, it is HIS lunch hour!"

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'Give A Needy Book A Home' Aim of 3400 Christmas Project

As in past years, Organization 3400 is sponsoring a book and record sale during the Christmas season to raise money to buy necessities for families living in the small communities in the Manzano Mountains.

Campaign motto for this year is "Give a needy book a home." Most of us have unwanted or already-read books taking up space at home, so give these old books a break and bring them to the LAB NEWS office, Rm. 133, Bldg. 802. Hard covers, paperbacks—any kind—they'll all be put on the sale rack.

Also welcome are records. Any clothes, appliances and non-perishable foodstuffs donated will be distributed to the needy families. The sale begins on Monday, Dec. 8, in the lobby of Bldg. 802. So bring your books, records, or whatever to the LAB NEWS office as soon as possible.

Last year the \$530 netted from the Christmas project was distributed in cash or merchandise to several mountain families and to the A. Montoya school.

Opera Association Christmas Tour To Feature Home of Tom Cook

A "Castlewood Champagne Christmas Tour," announced recently for the benefit of the Livermore/Amador Valley Opera Association, includes a visit to the home of Tom Cook, Vice President 8000, and his wife Virginia. The Cooks live on Castlewood Drive in Pleasanton.

Their home is one of four located on the grounds of the Castlewood Country Club which will be open for the event on Sunday, Dec. 7, from 1:30 to 5 p.m. Other residences on the tour are those of Bill and Ruby Gilmore, John and Edith Marshall, and John and Rosemary Rodenbaugh.

All four homes have been featured in illustrated articles in the Oakland Tribune. They are within easy walking distance of each other on Castlewood Drive and of parking areas. Each, however, is entirely

different in architecture and atmosphere.

Many hours of effort on the part of home owners and committee members began in mid-September in preparation for the benefit. Homes will be decorated inside and out, providing ideas for holiday table settings, walls, windows, garden, and odd corners. In all, there will be 32 Christmas trees, including unusual types and themes—one indoor tree is 20 feet high.

From 4 to 5 p.m. champagne and canapes will be served at the Veterans' Memorial Building in Pleasanton.

Advance prepaid reservations are required. Checks for \$5 donation per person should be mailed to Valley Opera Association, 70 Castlewood Drive, Pleasanton 94556, with a stamped, self-addressed return envelope.



HOME OF THE TOM COOK FAMILY (above) is among those which will be included in the "Castlewood Champagne Christmas Tour" on Dec. 7 for the benefit of the Livermore/Amador Valley Opera Association. Shown with Tom (8000) are his wife Virginia (left), daughter Shelley, and poodle Sammy.

UC/Davis Campus

University of California Announces New Master's and PhD Program

The University of California at Davis has announced a new program leading to a master's or doctor's degree in the Mechanical Engineering Department.

The program which begins with the winter 1969-70 quarter is available to qualified Sandia Laboratories Livermore employees under Sandia's Educational Aids Program. The purpose of EAP is to provide an opportunity for accredited college attendance to those employees who are most likely to benefit the Laboratories as a result of additional training. Under EAP, 50 percent of tuition charges are reimbursed by Sandia for credit courses successfully completed. In addition, a limited amount of time off may be granted for attending classes which are not available outside working hours.

Through the new UC/Davis program, a candidate under EAP may obtain his master's degree within two years. He is required to write a thesis and accumulate up to 18 credit hours of formal course work, which can be realized by attending one class, one day a week on the Davis campus. A PhD degree may be pursued under the same arrangements with completion within three years, including research and dissertation.

Typically on the one day of formal course work on the Davis campus, those participating would begin class at 10 a.m., break at 11:30 a.m. for lunch, resume at 12:30 p.m. and finish at 2 p.m. Courses with laboratory requirements would add two-and-a-half to three hours to this schedule on the same day. Necessary thesis or dissertation work can be job related where possible and done at SLL.

Jim Smith of Training and Benefits Division 8214 says that SLL and LRL have

been working jointly for over six months toward the establishment of this kind of an engineering education program. "Now that such a program is a reality, its announcement has been received with much interest and enthusiasm at both labs.

"The scheduling of formal course work for just one day each week appeals to the Sandia engineer who would like to return to school for a graduate degree," Jim continues. "The new program allows the engineer to achieve his educational goal with minimum interference to his job duties, travel schedules, family, and community obligations. Also, because the entire program is not drawn out over many years, the engineer can see a recognizable end in sight in his efforts towards a graduate degree. Moreover, heavier emphasis upon a job related thesis or dissertation brings the overall program into closer coincidence with the work the engineer is doing at Sandia and makes the program more relevant for him."

Dr. Harry Brandt, Chairman of the Mechanical Engineering Department at UC/Davis and organizer of the program, met with a group of interested Sandia engineers at Livermore Oct. 31 to discuss the new program.

For others who may be interested, further information may be obtained from Jim, ext. 2251.

Congratulations

Mr. and Mrs. Phil Leiserson (8212), a daughter, Patricia Marie, Nov. 4.

Michael J. Nicholson (8164) and Judith Jackson, married in Livermore, Sept. 13.

Mr. and Mrs. Terry Dowell (8337), a son, Mark Vincent, Oct. 26.

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SANDIA LAB NEWS

NOVEMBER 21, 1969



"IT'S HOLIDAY FUN TIME!" says Mary Witek (8325) as she decorates a tree at Hotel Claremont in Berkeley, where this year's Sandia Christmas Dance will be held Dec. 12.

Christmas Dinner-Dance at Hotel Claremont Dec. 12

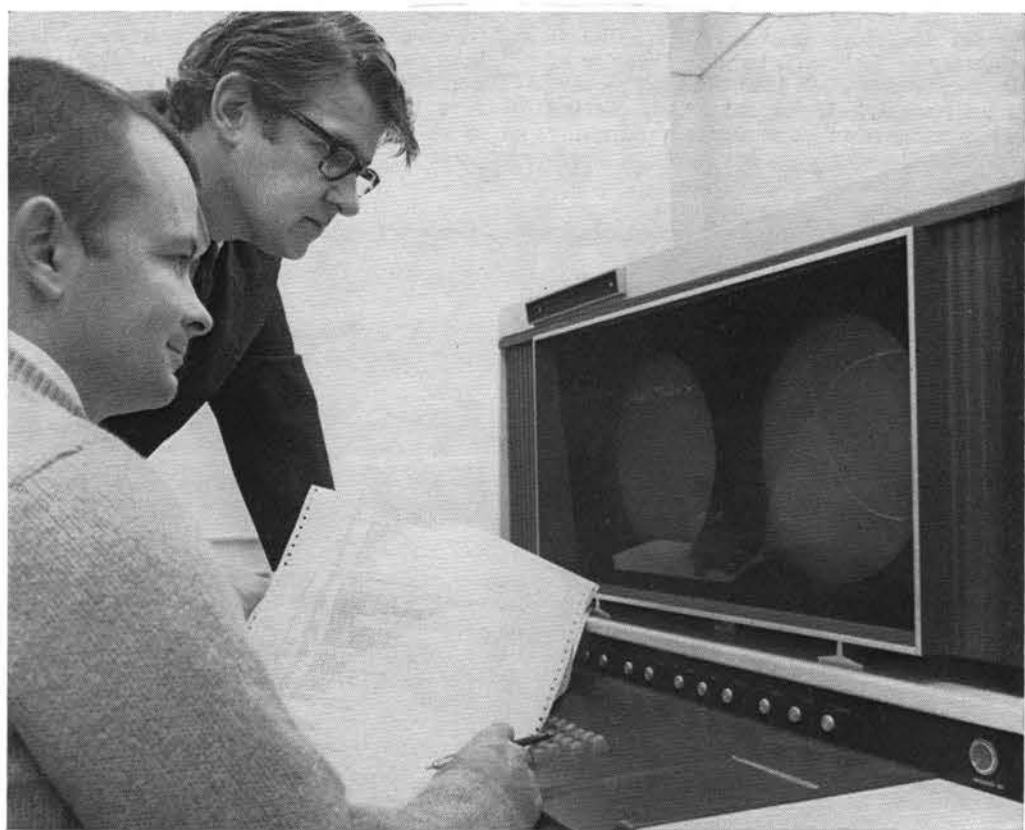
This year sale of tickets is going great for the SLL Christmas Dance slated for Friday evening, Dec. 12. The annual holiday party will be held at Hotel Claremont in Berkeley and is open to Sandia and LRL employees and their guests.

The Employee Dance Committee has reserved both the Garden Room and the Terrace Lounge at the Claremont for the evening. Refreshments will be available beginning at 6:30 p.m., followed by a buffet dinner at 8 p.m. Dancing will continue from 9 p.m. to 1 a.m. to the music of Maury Wolohan's orchestra and Lori English, featured vocalist. Cost of the dinner/dance is \$15 per couple. Bus service to and from Hotel Claremont will be offered if sufficient interest is shown.

One of the new innovations this year will be a huge birthday cake on which will be written the names of those employees attending who have birthdays during the month of December.

A number of other new features are being included this year. Baby-sitting service will be available at the Claremont at \$1 per family for children under 12 years of age. One hundred rooms were reserved at \$5 per couple for those who wished to spend the night. However, those room accommodations have been taken by early ticket purchasers. For those with rooms who wished to stay an extra night to make a holiday weekend vacation, the cost of the rooms remained the same.

Tickets for the dinner/dance and baby-sitting service may be obtained from: Carolyn Kersey, Bldg. 911 Lobby; Nancy Martin, Bldg. 912, Rm. 242; Mike Ferrario, Bldg. 912, Rm. 228; Marie Dremalas, Mobile Office No. 3, Suzanne Frandsen, Bldg. 912, Rm. 116; Marge Mederios, Bldg. 913, Rm. 100; Helen Bond, Bldg. 912, Rm. 106A; Juavana Stark, Bldg. 916; Rm. 121; Ginger Common, Area 8, Bldg. 973, Rm. 110; Barbara Carter, Employee Benefits.



REMOTE CONSOLE OF CDC 6600 COMPUTER displays sensitivity coefficients of a third order differential equation (left screen) as the other screen shows the curves generated by the equation. Jerry Alcone (8133), seated, executes a parameter search in a control system using MIMIC computer language adapted for use at Sandia by Dick McHugh (8322). Console allows operator to display any system defined by differential equations and to monitor or change the computer program for optimum parameter selection. Use of the console—located in Rm. 260 of Bldg. 912—may be scheduled during or after normal working hours by contacting the Computer Operations Section.

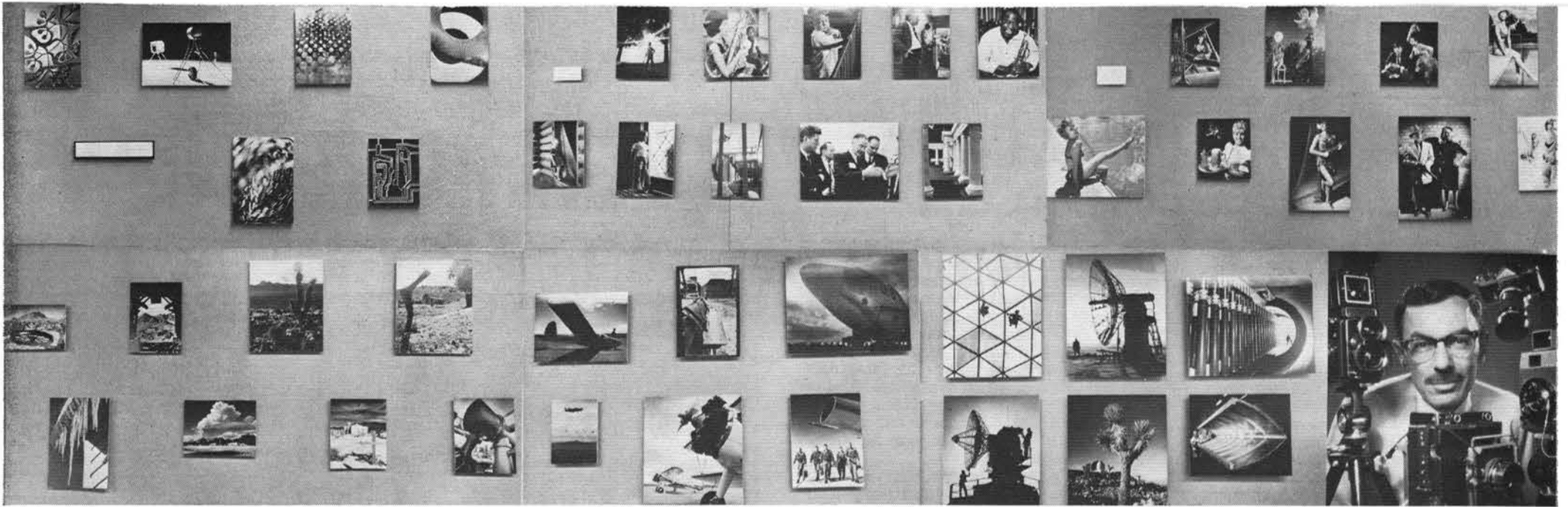
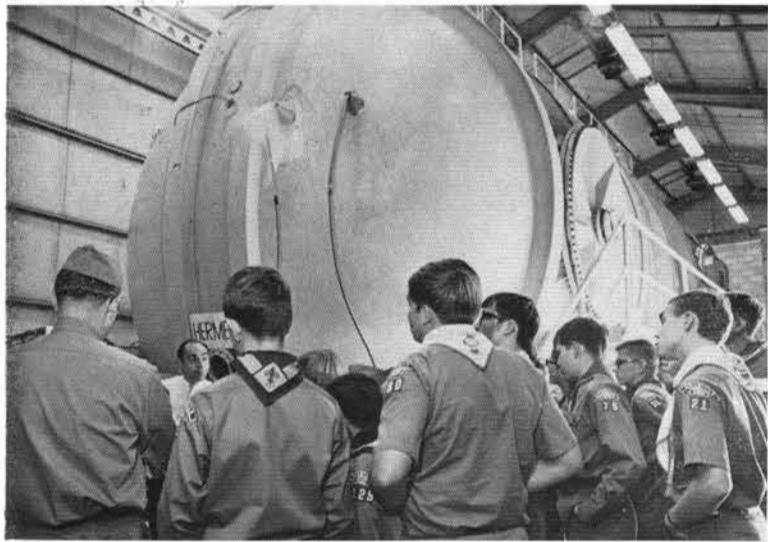


PHOTO DISPLAY by Bill Laskar, LAB NEWS photographer, is on exhibit in the lobby of Bldg. 802. Bill is one of the judges in the current LAB NEWS photo contest.



ABOUT 235 BOY SCOUTS from troops within the Texas Panhandle toured Sandia Laboratories reactor facilities in Area V recently. In photo at left, Alan Chodorow (5221) explains uses



of Hermes II flash x-ray machine. At right, Jennings Conant (5221) explains SPR-II pulsed reactor. The group also toured the new Sandia Base Atomic Museum.

Take Note

Two talks are scheduled during the next couple of weeks for the 5100 Staff Seminar Series.

Jeff Lawrence (5162) will present "Problems in Applied Wave Propagation" on Tuesday, Nov. 25.

Richard Nettleton (5151) will discuss "Interaction Between Proton Tunneling and Optical Phonons in KH_2PO_4 " on Tuesday, Dec. 2.

The Seminar meets in Bldg. 806, Rm. 201, at 8:30 a.m.

* * *

Luke Heilman, director of Quality Assurance 7400, was elected recently to the board of directors of the Greater Albuquerque Chamber of Commerce. He will take office Jan. 1. He has previously served as an Albuquerque City Commissioner.

* * *

Dale Jones (2642) and Don Hosterman (3134), usually "frustrated golfers," placed well in the First Annual Albuquerque Amateur Tournament sponsored by the Albuquerque Golfers Association and Bellas Hess. The Sandia team scored a 32-under-par 183 to win the best ball competition, and their 422 net (two-man team total) was good for second place in team competition. The Sandians picked up trophies and prizes at a banquet Nov. 7.

* * *

University of Arkansas alumni will meet for a buffet luncheon Saturday, Dec. 6, at the KAFB Officers Club. The group will watch a telecast of the Arkansas Razorbacks playing the Texas Longhorns. Kick-off will be about 11:30 a.m. Reservations may be made through Ragon Kinney, tel. 298-5281.

November 28 to Be Big Day For George and Marian Dixon

For the past eight years George Dixon has been Sandia's "Mr. Telephone." He is retiring the end of this month after more than 20 years at the Laboratories. George is a staff assistant in Administrative and Coordinating Section 4541-1 and is the telephone service liaison between plant engineering, the customer and the Signal Corps. He joined Sandia in September 1949 and has worked in manufacturing, purchasing, field test and plant engineering.

Marian, George's wife, has also been at Sandia for more than 20 years. She is secretary to Harlan Lenander, Director of Weapons Application 1600. "I'm taking early retirement," George says, "but Marian is too young to retire so she is terminating

the same day that I leave.

"It's a funny thing," George says, "but before we worked for Sandia, Marian and I were employed by the School of Mines. We both applied for work at Sandia, but Marian received her clearance 30 days before I got mine. So, she celebrated her 20-year anniversary with Sandia in August while I had to wait until September."

The Dixons are making no definite plans for retirement except to rest and play it by ear. They each have a hobby—George woodworking, and Marian, painting—and both enjoy fishing, working in their yard, and traveling. "As the saying goes," George says, "we will be footloose and fancy free to do anything we want."



RESTORATION of this 30-year-old oil painting was accomplished by George Shelton (3123) after the painting was damaged by vandals. George also restored a similarly defaced mural on the entrance wall of the Hilton Hotel.

GEORGE DIXON reassures his wife Marian that he will soon give up his role as Sandia's "Mr. Telephone." The couple will retire Nov. 28.



KOREA was the subject of colloquium talk last week by Gen. Charles Bonesteel (left), recently retired commander of UN/US forces in Korea and of Eighth Army. Gen. Bonesteel talked at Sandia once before in Interdisciplinary Colloquia in 1965. He is shown here with his hosts, Howard Stump and Don Cotter of organization 100.

Retiring

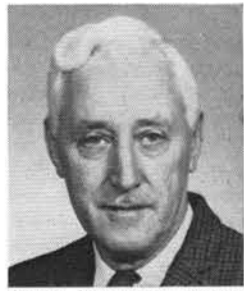


Lawrence Metoyer of Janitor Service Section 4574-1 is retiring the end of this month. He joined Sandia in January 1957 and has been with the janitor division the entire time. He worked as a janitor for five years and then transferred to his present job with a crew which cleans, oils and installs filters. Before his employment at the Laboratories, Lawrence was self-employed as an upholsterer.

Mr. and Mrs. Metoyer have two sons, both married and living in Albuquerque, and two granddaughters. Their youngest son, Paul, also works at Sandia in the Mail Services Section 3428-3.

Lawrence is taking advantage of Sandia's early retirement plan. "I'm ready to begin to take life easy," he says. "I've worked for 50 years. I went to work when I was 12 years old for 50 cents a day."

Lawrence's retirement plans include trips to Louisiana (his former home) and California to visit with relatives. He says he will also do some upholstery work to help keep occupied.



Ed Allen, a supervisor in the Machine Shop for almost 21 years, is retiring Nov. 28. During the month of November he is on special assignment in Mechanical Department 4250. Ed joined the Laboratories in December 1948; his most recent position was supervisor of Section 4254-4. Before coming to Sandia, Ed was a member of the aerodynamics staff at Johns Hopkins Flight Physics Lab in Silver Spring, Md.

Mr. and Mrs. Allen will continue to make their home in Albuquerque at 1213 Cardenas NE. They have one son also living in Albuquerque.

Retirement plans include lots of travel for the Allens, beginning with a trip to San Carlos Bay in Mexico. "We'll leave two days after my retirement," Ed says. "We're going to do some deep sea fishing and relaxing. Next year we will travel to the East and Canada." Mr. and Mrs. Allen also enjoy bowling, swimming and golfing.

* * *



Clarence Carrell, a security inspector in Security Operations Department 3520, is retiring Nov. 28. Before joining the Laboratories in November 1950, he had worked in the transportation office for the State of New Mexico.

Mr. and Mrs. Carrell will continue to reside at 2417 Madeira NE. Their 17-year-old daughter Linda is a senior at Del Norte High School.

Clarence says his retirement plans are indefinite. "I'll just relax for a while and take time to make up my mind."

He is very active in Masonic work — in all branches of the Order. On Dec. 6, Clarence will receive one of the highest Masonic degrees to be issued—the K.C.C.H.

* * *



Helen Culley, a nurse in Industrial Medicine Section 3321-1, will retire Nov. 28. She has been with Sandia 19 years, since November 1950. Before joining Sandia, Helen had been a visiting nurse in Oklahoma City.

Helen is taking an early retirement, "just to relax and enjoy myself," she says. Her husband Bob is also employed at the Laboratories in Division 7511. "Bob also hopes to be able to take early retirement—perhaps next year, so I'm making no definite plans until then," Helen says. "We will travel after Bob retires and we are both going to take up golf. In fact I will begin golf lessons in the spring. In the meantime, I hope to play lots of bridge and enjoy all my free time."



Leone Davis of Access Control Section 3521-1 is retiring the end of this month. She joined Sandia in February 1956, and except for the first year when she worked in Finance, has been with the security organization.

Leone expressed her feelings in the following manner:

"Before I leave my overworked telephone for my piano, my hoe and my paintbrushes, I would like to thank the many people who have made my job enjoyable. The technical people who have been so patient with my interruptions. The secretaries — what a good group they are. The security offices here and all over the country who have made me feel that security is a network of friends. Thanks to Sandia Labs and the teachers of out-of-hours courses. Those courses have been very useful and informative and a way of meeting people I would not otherwise have had a chance to meet. Thanks too to the co-workers in my own office and all over security who have worked with me all these years. I shall miss you all. — Visitor Control Leone."

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SAFETY was designed into this remote control facility in Bldg. 940 used for precision machining of explosive components and materials. Tom Massis demonstrates use of the master slave manipulators from control room. A small explosion in the chamber recently did negligible damage to equipment. Operator was completely protected by heavy shielding glass.

Getting a Bang Out of Work

Area II Facility Has Safety 'Designed-In'

Bob Buxton and Tom Massis are two Sandians who naturally expect to get a bang out of their work. They operate the Bldg. 940 Remote Control Facility in Area II for Explosive Application Division 2346. In addition to their own projects, they maintain the facility for use by other Sandia organizations for experiments involving explosive or chemically hazardous materials. After receiving instructions in safety procedures, other experimenters may use the facility.

Two recent incidents at the Remote Control Facility point up the value of "designing-in" safety and the necessity for strict safety procedures. Both Bob and Tom helped design the facility and write the safety procedures for work in the area.

One of the incidents involved an explosion and the second a fire. Because the facility was designed to handle such events, there were no injuries and negligible damage to equipment.

The explosion occurred while a small explosive actuator was being machined for postmortem analysis in the facility.

All preliminary tool alignments and adjustments had been made using an inert unit. Following this, the operator had machined the first of two units without incident, using master slave manipulators from a remote control panel in an adjoining room. While a thin metal plate was being removed from the second unit, still

by remote control, the explosives in the unit detonated. The explosion was contained in the machining chamber. There was no injury to the operator, or damage to equipment or building.

The fire occurred during cleanup following a spraying operation involving chemically hazardous materials. The safe operating procedure for the job calls for the spray gun recirculating system to be emptied into an appropriate container for waste disposal and that the spray system then be flushed three times with acetone to remove all explosive residue. One employee had poured the third container of acetone into a kitchen-type blender cup in keeping with the procedure. When a second employee switched on the blender — again according to procedure — fire engulfed the spraying chamber.

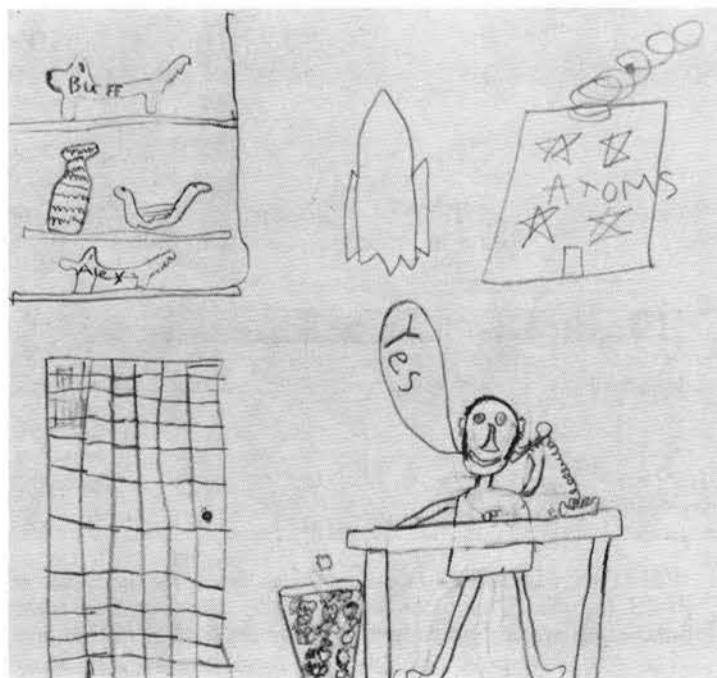
The building evacuation alarm was immediately sounded and the area was cleared. The protection door to the hall was closed and the sprinkler deluge system was activated. The Base Fire Department was summoned.

After the firemen arrived, the control room was reentered and the small fire remaining was extinguished by remote control. There was no fire damage and water damage was minimal. Once again, safety planning for such an incident had paid off.

Insights By The Very Young

Occasionally LAB NEWS receives unsolicited articles or photographs, but none have been so charming as this drawing. It's an eight-year-old's interpretation of "where Daddy works." The family dogs, "Buff" and "Alex," lend a homey touch to the office, but the door does have a security grill on it. The "yes" is subject to several interpretations.

Why not have your young son or daughter draw their version of your job or where you work? Send sketches to the LAB NEWS by Dec. 8 and we'll print the most appealing contributions.



Authors

Marvin Moss (1224) and D. M. Schuster (5314), "Mechanical Properties of Dispersion-Strengthened Spray-Quenched Al-V Alloys," Vol. 62, No. 1, ASM TRANSACTIONS QUARTERLY.

M. R. Scott (5222), "Invariant Imbedding and the Calculation of Internal Values," October issue, JOURNAL OF MATHEMATICAL ANALYSIS AND APPLICATIONS.

B. R. Hawkinson (4135), "A Computer-Controlled Microfilm System," December issue, DATAMATION.

C. E. Land (5133), "Electrooptic Ceramic Storage and Display Devices," January 1970 issue, OYOBUZURI, the Japanese language publication of the Japan Journal of Applied Physics.

G. A. Samara (5132), "Effects of Hydrostatic Pressure on Ferroelectric Properties," chapter in recently-published book, ADVANCES IN HIGH PRESSURE RESEARCH.

G. W. Arnold (5111), "Luminescence in Intrinsic and Annealed Electron-Irradiated GaAs: Cd," Vol. 183, No. 3, PHYSICAL REVIEW.

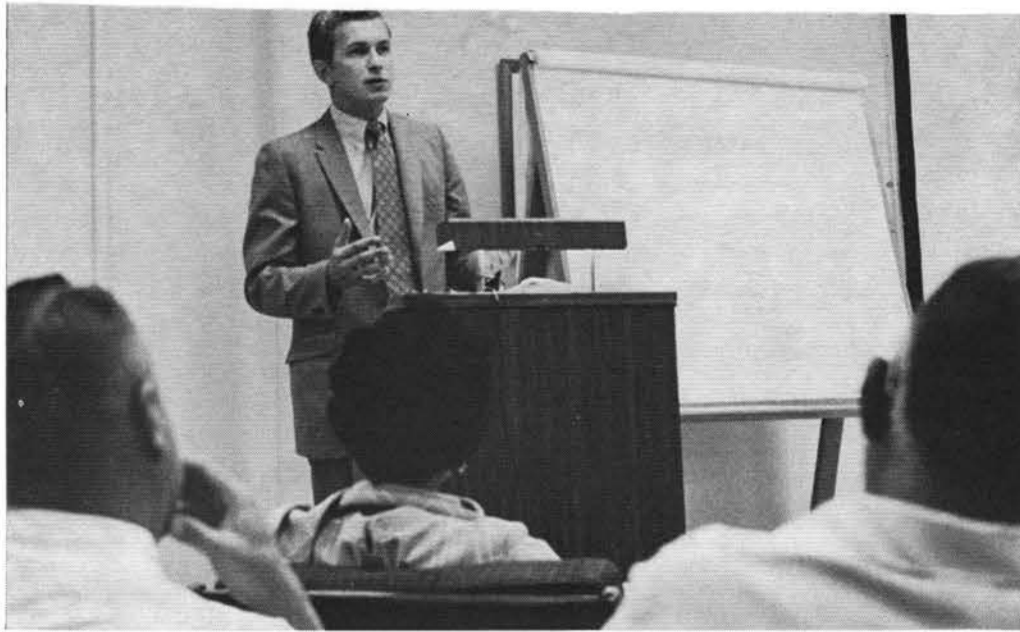
R. G. Easterling (1643), "Discrimination Intervals for Percentiles in Regression,"

September issue, JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION.

C. W. Harrison and Margaret Houston (both 2625), "The Response of a Terminated Two-Wire Line Buried in the Earth and Excited by a Plane-Wave RF Field Generated in Free Space"; Harrison, "The Response of a Terminated Two-Wire Line Suspended in Air Above a Semi-Infinite Dissipative Medium and Excited by a Plane-Wave RF Field Generated in Free Space," both in November issue, IEEE TRANSACTIONS ON ELECTROMAGNETIC COMPATIBILITY.

R. L. Gerlach (5331), "Kinetics of Nucleation: The Steady State," Vol. 151, No. 5, JOURNAL OF CHEMICAL PHYSICS; Gerlach and T. N. Rhodin (Cornell University), "Structure Analysis of Alkali Metal Adsorbed on Single Crystal Nickel Surfaces," Vol. 17, No. 1, SURFACE SCIENCE.

A. R. DuCharme (5331) and E. T. Kinzer (University of Alabama), "Effects of Surface Impurities on Lattice Response and Trapping," Vol. 17, No. 1, SURFACE SCIENCE.



DRUGS ON THE MARKET—Among presentations at the retraining program for Sandia security personnel was one by Jan Larsen, former special agent for the U.S. Bureau of Narcotics, who spoke on "Drug and Narcotics Abuse." Mr. Larsen, now department chief of employee security at WE, stressed the need for new approaches to the problem of drug abuse. The program also included sessions on the use of eavesdropping devices in industry, presented by Jim Spirup (8261); civil disturbances, by Percy Wyly (3512); and better personal communication, by Al Wyer and Bill Dehon (both 3131).

Speakers

R. E. Thompson (7653-1), "Computer-Aided Precision Graphics," UNM Mechanical Engineering Department, Oct. 29.

E. D. Jones (5114), "NMR Studies of Rare Earth Intermetallic Compounds," Florida State University, Oct. 23, Tallahassee.

J. P. Brannen (1741), "Some Applications of Biophysics in Spacecraft Sterilization Technology," UNM Physics Colloquium, Oct. 31.

A. J. Toepfer and D. R. Smith (both 5242), E. H. Beckner (5240), "Ion Heating in the Dense Plasma Focus"; D. A. Freiwald (5241), "A Study of the Head-On Collision of Shock Waves in a Double-Ended Shock Tube with Electromagnetic Drivers"; J. W. Poukey (5243), "Time Dependent Collisionless Plasma Sheath"; A. J. Mulac (9342), "Experimental and Theoretical Investigation of a Low Mach Number Precursor Phenomenon in Argon"; J. R. Freeman and F. O. Lane (both 5242), "Numerical Studies of Plasmoid Interaction with an Axially Symmetric Magnetic Field," American Physical Society meeting (Plasma Physics Division), Nov. 12-15, Los Angeles.

Walter Herrmann (5160), "Non-Linear Stress Waves in Metals," ASME Symposium on Wave Propagation in Solids, Nov. 16-21, Los Angeles.

G. H. Miller (5235), "Emission Cross Sections for H⁺, Na⁺, Ne⁺, Rb⁺ Incident on Molecular Nitrogen"; E. L. Burgess (5313), "Effects of Substrate and Adsorbate Work Functions on Thermionic Emission"; C. J. MacCallum (5231), "Some Exact Results in Electron Multiple Scattering Theory," American Physical Society (Division of Electron and Atomic Physics), Nov. 17-19, New York City.

L. C. Bartel (5132), "Calculation of Near Neighbor Spin Correlation Functions in MnO for T < T_c"; Albert Narath (5100), "NMR Studies of Magnetic Impurities in Metals"; Narath and H. T. Weaver (5151), "NMR Studies of Pd-Rh and Ni-Rh Alloys," 15th Annual Conference on Magnetism and Magnetic Materials, Nov. 18-21, Philadelphia.

J. F. Reed (9322) and W. H. Curry (9322), "Aircraft Separation Problems Associated with Nuclear Ordnance — A Survey," Air Force Symposium on Aircraft/Stores Compatibility, Nov. 18-20, Eglin AFB, Fla.

J. M. Hueter (3134), "Creativity — A Happy Way of Life," Sandia Kiwanis Club, Nov. 4.

D. F. McVey (9328), "Graphite Nose-tip Studies," National Graphite Technology Interchange, Oct. 28-29, Sandia Laboratories Albuquerque.

6000-Mile Trip

To Dawson Creek and Back on Two Wheels

Dave Coy's idea of a fun time probably won't attract many converts. For instance, how about a 6000-mile trip in three weeks to far northwestern Canada—on a motorcycle?

Dave, who's assigned to division 1211, recently completed just such a trip with "two-up," that is with his 13-year-old son riding behind him, along with sleeping bags, fishing gear, foul weather clothing, cold weather clothing, a tent, and a few incidental items. They camped out all the way, except for one cold night spent in a motel.

What happens when it rains? "You get wet," Dave notes. "Actually, it rained only four or five times and we both had rain suits so it wasn't too bad. We had more trouble with cold weather and on a few days could do only 150-200 miles. I had on every stitch of clothing — but I still got chilled."

In the Canadian Rockies in British Columbia Dave and young Dave saw much

game: elk, grizzly bear, caribou, mountain goats and sheep. Also lots of bird life.

"Touring on a bike is the only way to go," says Dave. "If your purpose is to see the countryside, you really feel more a part of it on a bike than when you're shut up in an automobile."

Oddly enough, in Dawson Creek where winter starts in late September and runs through April, Dave observed that motorcycles are very popular. Wintertime riding at 30 below should be exhilarating . . .

Dave has been riding bikes since he was 16 and in the last four years has travelled some 100,000 miles on motorcycles. "Never had an accident, but then I'm conservative and defensive. There's no reason an adult motorcyclist should be any more or any less safe than his counterpart in an automobile," Dave says.

Where to next? "Well, we're talking about a little jaunt to eastern Canada — to Nova Scotia, Newfoundland, and that area. Care to join us?"



DAVE COY (1221), son Dave and BMW motorcycle pause in Canadian Rockies during trip to northwestern Canada. "Bronson" TV show scout tried — unsuccessfully — to recruit Dave for episode in motorcycle show as pair drove through Utah.

Former State Champion

Bill Farrar Still a Hot Shot

Can a top pistol shooter make a comeback in competition after 11 years of inactivity? Ask Bill Farrar (7532-1). Back in 1957 Bill earned more than 70 medals including five first place awards in Ohio state pistol matches. He was a champion.

At the time, Bill was a sergeant in the New York Central Railroad police force. In addition to other duties, he was a training officer in charge of marksmanship instruction for the force. He was active in a number of gun clubs and regularly swept local, county and state competitions firing .22, .38, and .45 calibre pistols.

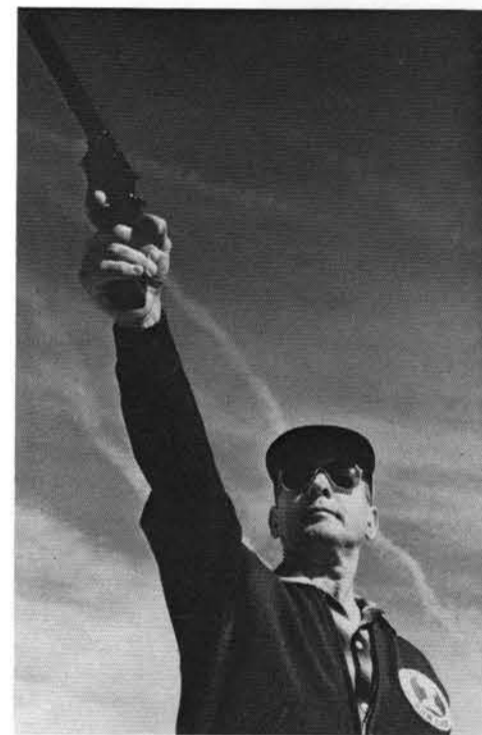
He gave it up when he left the police force to enter electronics. During a period of 11 years, Bill fired a pistol on only one occasion.

Then, in February 1968, Bill joined the Sandia Gun Club and started the "come-back" trail.

Recently he was a member of the Sandia pistol team which won first place in the National Industrial Recreation Association Region Six tournament and earned second place in the regional individual tournament. More than 400 shooters competed.

Other members of the Sandia team were Ray Mosteller (9132), Dave Bennett (2342) and Bob Davis (7342).

"I'm not kidding myself," Bill says. "I'm rusty and I don't have time to practice. As in any sport, a pistol shooter has to keep in shape. And I wear bifocals now and I can't see both my gunsight and the target in sharp focus at the same time. But I enjoy the competition of the great shooters in the Sandia Gun Club. I'll stay with it."



AFTER 11 YEARS of inactivity, Bill Farrar concentrates on regaining pistol shooting skill. He is a former state champion in Ohio. In recent NIRA competition, Bill was second place regional winner and a member of the Sandia team which placed first in the event.

Value Engineering Workshop Conducted

Jack Hueter (3134) and Jack Cejka (7623) recently conducted the 40th Value Engineering Workshop in the Sandia VE education program at the AEC Oak Ridge Operations Office. The second to be conducted at Oak Ridge, the workshop was attended by 16 AEC people and 30 people who represented various AEC contractors.

To date, a total of 1413 persons — from Sandia, AEC, and AEC contractors — have attended the workshops, which have been presented throughout the U.S., including Hawaii.

Now a function of University Relations Division 3134, the VE program includes presenting value engineering training to students at the University of New Mexico.



BILL FARRAR displays some of the 70 medals won in pistol competitions during the years 1950-57.



WESTERN ELECTRIC representatives from 18 locations met in Albuquerque Oct. 21-23 for the 52nd Inter-Works Salary Grading Conference. The discussions gave Sandia job evaluation supervisors Homer McIlroy (3114) and Truman Daniel (3111) a chance to learn more about WE practices and policies. Seated below them are (l to r) Joseph Lee, Chairman Edward Noga, and Ray Manhardt, all of WE headquarters.

Service Awards

20 Years



Fred Eichert
7610



Joseph Hegge
5525



Lois Kelley
7614



James Lindell
1521



Howie Mauldin
2351



Phil Nicovich
7612

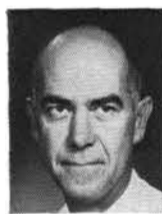


William Peters
4511



Jack Spence
4363

15 Years



John Barnum
2316



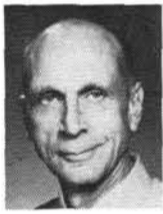
Geri Costello
9411



Richard Davis
2632



Ray Harrison
9133



Clinton Henry
7263



Alvin Kaping
4332



Thomas Lenz
4141



Margerite Miller
3411



Hazel Minter
4200



Gail Ward
3417

10 Years

Robert Klingler 8131, Marjorie Michaud 1612, Vincent Arroyo 4545, Mary O'Shea 8216, Betty Barnhouse 8253, Regina Kamp 8161, James Guthrie 2615, Taylor Abegg 2340, James Pacini 2626, Betty Wilkins 3256, Stephen Zounek 4518, William Stalcup 4574, Jack Brierly 8311, Millicent Hulgan 7631, and Evelyn Horn 3236.

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SANDIA LAB NEWS

NOVEMBER 21, 1969

Take Note

A new exhibit featuring some 50 paintings on the history and development of art in New Mexico goes on display tomorrow, Nov. 22, in the Fine Arts Museum of New Mexico at Santa Fe.

Speaking at a recent "Culture of New Mexico" lecture, curator Bob Ewing told Sandians that he would be glad to conduct any Sandia group on a tour through the show. Interested persons should contact Gary Montague (3132) at 4-6080 to arrange for a tour.

The exhibit will open at 2 p.m. tomorrow.

Christmas Card Drawings Donated to Cerebral Palsy Assn.

Three Sandia artists have donated drawings for reproduction on Christmas cards being sold to benefit the United Cerebral Palsy organization.

This is the first time the women's auxiliary of the health agency has attempted this type of fund-raising activity. The money is needed to start pre-school train-

ing classes for children with cerebral palsy.

(Cerebral palsy, usually a birth defect, affects the central nervous system and causes a lack of muscle coordination.)

Cost of the cards ranges from \$3.75 to \$5 for 25. Further information may be obtained from Mrs. Richard Patrick, 1818 Morningside NE, tel. 255-0432.



JUDY ELDER (3417) selected a composite of New Mexico's adobe churches for her Christmas print. The card is medium blue with darker blue details.

Congratulations

Mr. and Mrs. J. D. Williams (2652), a daughter, Marilyn Renee, Nov. 6.

Mr. and Mrs. Raymond Uhler (9231), a son, Gregory Alan, Nov. 4.



JIM WALSTON (3417) is known for his drawings of Indians. The drawing of this Navajo family is reproduced on a beige-colored card.



JANET JENKINS (3417) works in a wide variety of media. This is her stylized version of the "partridge in a pear tree." The design is avocado-green and black on a yellow background.

SHOPPING CENTER

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CLASSIFIED ADVERTISING
Deadline: Friday noon prior to week of publication unless changed by holiday.
A maximum of 125 ads will be accepted for each issue.

RULES
1. Limit: 20 words
2. One ad per issue per person
3. Must be submitted in writing
4. Use home telephone numbers
5. For Sandia Laboratories and AEC employees only
6. No commercial ads, please
7. Include name and organization
8. Housing listed here for rent or sale is available for occupancy without regard to race, creed, color, or national origin.

FOR SALE MISCELLANEOUS

FOUR used tires, 8.85x15, \$4/ea., Sear's push lawn mower, \$12; gas log for fireplace, \$25; water softener, Mircale Water, \$275. Everett, 264-9133.

'69 YAMAHA 175cc Enduro, 4000 miles, \$475. Alden, 255-4827 after 5.

TURQUOISE satin self-stripe sofa, 82" long, \$150. Cowan, 299-1591 after 5 p.m. or before 8 a.m.

SMITH & WESSON .38 revolver, \$25; German .22 revolver, \$10; Stevens bicycle rifle \$40; trade for old hunting knives. Smitha, 299-1096.

JUDO JACKET, \$3.50, Durant, 298-4952.

HEATH KIT audio oscillator model A0-1, generates sine & square waves, 20 Hertz to 20,000 Hertz, \$25. Henry, 256-2467.

MAGNAVOX AM/FM radio-stereo comb., walnut cabinet, 3 yrs. old, \$150. McDonald, 299-9269.

250 CC KAWASAKI dirt & trail bike. Cropp, 296-1877.

NEW handmade dacron lined, light weight, warm comforters, \$20 ea. Boal, 265-0633 after 4.

ROYAL std. typewriter. Lucci, 299-7368.

WEST HIGHLAND white terrier puppies, AKC reg.: Schwimm bicycle, boy's 3-sp., light weight, will deliver. Sims, 255-6967.

PAIR wide rim wheels for 10x16.5 duplex tires, eight lug bolt holes, \$25 ea. Schneider, 299-6243.

GOLF CLUBS 1968 Haig ultra irons, steel shaft, D4, SS leather grips, 2-PW, \$65. Rodeman, 299-5259.

AUTO RADIO, Motorola, transistor powered, 6 volt pos. or neg. ground, works but needs work, \$5. Abrams, 344-8252.

UPRIGHT PIANO, \$475; 8' couch, \$175; lg. dresser, \$65. Ash, 242-1438.

ARGUS C-3 camera w/light meter in leather cases, including flash attachment, \$25. Mason, 242-9298.

7.35x14 white sidewall Atlas tire, approx. 1/8" tread depth remaining, \$3.50. Stark, 298-6139.

BLACK leatherette portable bar w/2 matching swivel stools. Luna, 298-0555.

MOBILE HOME, 12'x47', '66 model, \$3500, available Dec. 1, see at 10804 Central SE. Farness, 299-8135 or 299-0927.

FUR COAT, full length, size 8 sheared muskrat, purchased from Harpers Furriers in 1966, \$225. Crumley, 299-5293.

R/C MODEL ENGINE, ENYA 60, brand new in box, never started. Lenz, 298-3872.

8' ALUMINUM Christmas tree w/revolving stand & color wheel, branches full. Center cannot be seen when assembled. Silva, 299-8737.

.22 PISTOL, Colt Match Target Woodsman, NRA excellent, \$75. Stephenson, 299-3914.

TIRE CHAINS, size 8.00x14/7.10x15, never unboxed, \$7; child's spring horse, Wonder Horse Brand, \$10. Alvis, 299-3906.

16" SEAR'S console color TV, \$55. Fowler, 265-0102 after 6.

DOUBLE WALL furnace alum. pipe, 6" dia., x 15' long, 90° & 45° elbow, cap. \$15. Windham, 265-3031.

PALOMINO, silver gelding, 4 yrs., \$250; 4 key-stone 14" maps fit GMC 5-stud, complete \$100. Luxford, 243-1693 or 867-5363.

CAMERA, 35mm Alpa single lens reflex model 7b w/Switar f1.8 50mm lens, \$95. Converse, 247-4568.

TWO 16-lb. bowling balls, \$5/ea., 1 pr. 8 1/2 bowling shoes, \$5. Smith, 299-6873.

30" COMMERCIAL, circular woodcutter, 4-cylinder, gasoline motor driven, \$500; 250-gal. galvanized water tank, \$25. Kopp, 268-4048.

COURSING DOGS, Greyhound-Afghan hound free to hunters who will course them. Crosby, 255-4737.

B-FLAT Bundy trumpet, \$95; clarinet, \$10; Suzie Homemaker oven, \$7 & vacuum, \$4; short wave radio receiver, \$15. Weber, 299-1389.

RECORD PLAYERS; Webcor 4-sp., \$15; RCA 45 RPM, \$5; 12-watt amplifier, \$15; Carlson cabinet w/new 12" speaker, \$20. Glass, 298-0842.

STROBE HONEYWELL 65-C w/NICAD batteries & cords, \$20. Rainhart, 299-2887 after 5:30.

TWIN PICKUP electric guitar & amp, \$45, used very little. Hubbard, 299-7818.

PUPPIES, West Highland white terriers, AKC, ready for delivery Dec. 15, perfect children's pet. Young, 296-1963.

8' CAB-OVER CAMPER, sleeps 4, ice box, stove, water pump & tank, \$450. Martinez, 877-6031.

'69 HONDA Scrambler 175cc, w/extras, \$580; trailer, motorcycle (f/two) w/spare, \$60. Trujillo, 256-3840.

SNOW TIRES, Goodyear Polyglas w/studs on Chevy wheels, G70-14, 12/32" tread remaining. Best offer for pair. Bennett, 268-5157.

WARD's water skis w/slolam, \$10; push lawn mower, \$8; Graflex tripod, \$8. Kyzar, 296-4308.

MAPLE bunk-beds & dresser, '67 Lady Kenmore (deluxe) auto. washer; light wood double bedroom suite; aluminum storm door. Montoya, 1605 Georgia NE.

TWO-HORSE TRAILER, has walk up ramp, new six-ply tires, safety hitch. Lujan, 243-7484.

WURLITZER blond spinet piano, full sounding board, recently tuned, \$350. Fortman, 256-2105.

MAPLE TWIN size bed & 36" bookcase; 2 outside doors 31 1/2" and 36". Dickason, 299-8125.

KNIGHT stereo preamp; 14" Datsun rim; '64 Plym. service manual; aluminum mail box; aluminum screen door, 2'8" x 6". Nelson, 264-1674.

CONCERTONE 505 tape deck, 2 spds., auto. reversal, \$250; set of tire chains, fits 7.60x15, 8.50x14, 6.50x16; maternity clothes, 12-14. Greenwood, 298-5268.

'59 CESSNA DOYN, 180 lycoming, constant speed prop, many extras, \$5750. Riley, 299-3163.

SILVER TOY POODLE, female, 2 yrs. old. Kelley, 265-7469.

STOVE, 36", griddle; 3-pc. sectional; dinette table. Roybal, 299-0938.

GARAGE SALE: toys, dolls, clothes, misc., 1020 Casa Grande Place, Sat./Sun. only. Robertson, 296-4613.

SNOW TIRES, Allstate rayon w tubeless, 7:75x14. Kelly, 255-7226.

RABBIT HUTCH & bag of feed, \$15. Mikkelsen, 268-1485.

CARS & TRUCKS

'64 CHEVELLE station wagon Malibu, automatic, \$900. Armstrong, 255-9122 after 5.

'67 FORD Galaxie convertible, new tires, take over payments. Huston, 344-3964 after 6.

'62 CHEVROLET Impala 2-dr. HT, PS, PB, factory air, new tires, low mileage. Lewis, 268-3835.

'65 DART, 2-tone blue, 4-dr., 270-V8, AT, AC, 53,000 miles, one owner, \$1100. Endres, 255-3251.

'64 FLEETWOOD CADILLAC. Mason, 296-7267 after 5:30.

'69 TOYOTA Corolla, 6800 miles, std. trans., \$1525. Eslinger, 299-6287.

'62 VALIANT, 2-dr., 6-cyl., \$400. Byrom, 268-2916.

'62 PONTIAC GP, PS, PB, AC, auto., 389 V8, new paint, \$550. Johnson, 299-7071 after 5.

'67 VW, AC, AM-FM radio. Minor, (1) 636-2194, '69 PLYMOUTH Road Runner coupe, 6000 miles, \$2400 or best offer (\$2665 NADA retail). Chavez, 299-5102.

REAL ESTATE

LOT in Glenwood Hills. Campbell, 268-8445.

GLENWOOD HILLS lot, 100x140, all utilities in & paid, \$4500. Stokes, 898-1237.

2-BDR. HOUSE, \$11,150, \$84/mo. incl. T&I. assume \$6400 at 5 1/4%, \$2500 down or cash to mortg., 5321 Mountain Rd. NE. Fisher, 265-0626.

5 ACRES in Edgewood, choice location for trailer, \$3595, terms available. Schwiner, 282-5207.

1-BDR. furnished duplex apt., SE Heights, \$11,950, \$70/mo.; repossessed lot for balance of \$1180, just continue monthly \$20 payments, paving paid, all utilities, south High St. Chavez, 298-5091.

WANTED

1968 or 1967 compact auto, sedan or station wagon, must be low mileage & in excellent shape. MacDougall, 299-8496.

CHEAP easel for left handed artist. Hayes, 298-4682.

METAL SKIS for 5'10" skier. Abrams, 344-8252.

MOTORS manuals, 1962 edition & earlier. Jonz, 255-7924.

QUALITY STUDENT MICROSCOPE. Howard, 282-5279.

SLIDE PROJECTOR w/500w lamp, remote control. Kyzar, 296-4308.

10-15-gal. aquarium w/accessories. Dickason, 299-8125.

TYPEWRITER, reasonable. Mickey, 255-8412.

DRUM SET, good condition. Hillard, 298-1226.

6 HP HORIZ. SHAFT gas engine. Adams, 268-5943.

LOST AND FOUND

LOST—Approx. 1/2 carat diamond from man's ring, brown leather billfold, black & silver Schaeffers ball-point pen, car registration in leather money clip, gold ball type earring on chain, silver button, Rx glasses w/tortoise shell frames, small white handle pocket knife, man's Omega yellow gold watch, ladies sunglasses w/black & white strip frame, Falcon pipe w/black stem & aluminum base. LOST AND FOUND, tel. 264-2757, Bldg. 610.

FOUND—10-yr. tie pin, brown bone handle knife, silver filagree earring, 10-yr. tie clip on chain, pipe, rose colored wind bonnet, men's Polaroid sunglasses, Rx sunglasses in tan leather case, pr. ladies white gloves, ladies sunglasses w/brown & white frames, black rimmed Rx safety glasses, pr. men's black leather gloves, rosary, Rx safety glasses w/brown frame, Algebra 2 book, pr. ladies brown driving gloves. LOST AND FOUND, tel. 264-2757, Bldg. 610.

Coronado Club Activities

'Soul Session' Tomorrow 8-12 p.m.

At one of the social hours a while back, a group called Rod King and the Knights made a tremendous hit with the TGIF crowd. Because of difficulties with the booking schedule, the Club was unable to have the group back until now. Tomorrow night Rod King and the Knights will make their big modern rock sound for a "Pre-Holiday Soul Session" from 8 to 12 p.m. Social hour prices will prevail all evening and it's free for members, 50 cents for guests.

Social Hour

Tonight, Tommy Kelly and the trio of smiling Irishmen will make the happy music while the Club's kitchen staff spreads the Mexican food buffet. The buffet costs \$1.25 for members, \$1 for kids.

Starting next Friday, the day after Thanksgiving, the Club shifts into the Christmas organization party season and social hour is limited to the main lounge from 5 to 7 p.m. This will be the schedule until after Christmas. In the meantime, the mid-week social hour continues on Tuesday evenings from 5 to 8 p.m.

Swim Club

The Coronado Aquatic Club has started its winter practice program at the Sandia Base Olympic pool. Swimming hours are 5 to 6 p.m. on Mondays and from 4:30 to 6:30 p.m. on Wednesdays and Fridays. The program offers physical conditioning, stroke improvement, and training for competitive swim meets. Membership is open to boys and girls through age 17 whose parents are members of the Coronado Club. More information is available from Chuck Mills (4541), 264-1958, or Julian Lovato (7651), 264-2648.

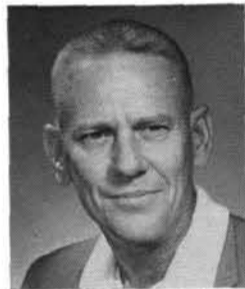
Noon Fashion Show

Rosario Ayres will present a noon hour style show of holiday fashions from Lilly-an's on Thursday, Dec. 4. Models will include Soila Candelaria (4364).

Bridge

Duplicate bridge meets Mondays at 7 p.m. Coronado Ladies Bridge will meet Thursday, Dec. 4, at 1 p.m.

Highly Adaptable Oscillator Invented Here by John Noe



John Noe (7263) has invented his third patentable item, a truly versatile transistor oscillator with wide applications.

A great deal of present day electronic equipment has adopted the modular form of construction which makes it convenient to use "off-the-shelf" electronic circuits in a variety of applications. However, until now, it was not possible to change an oscillator's characteristics by merely changing one component. For example, a change in the frequency-determining component has also required a change in other circuit elements.

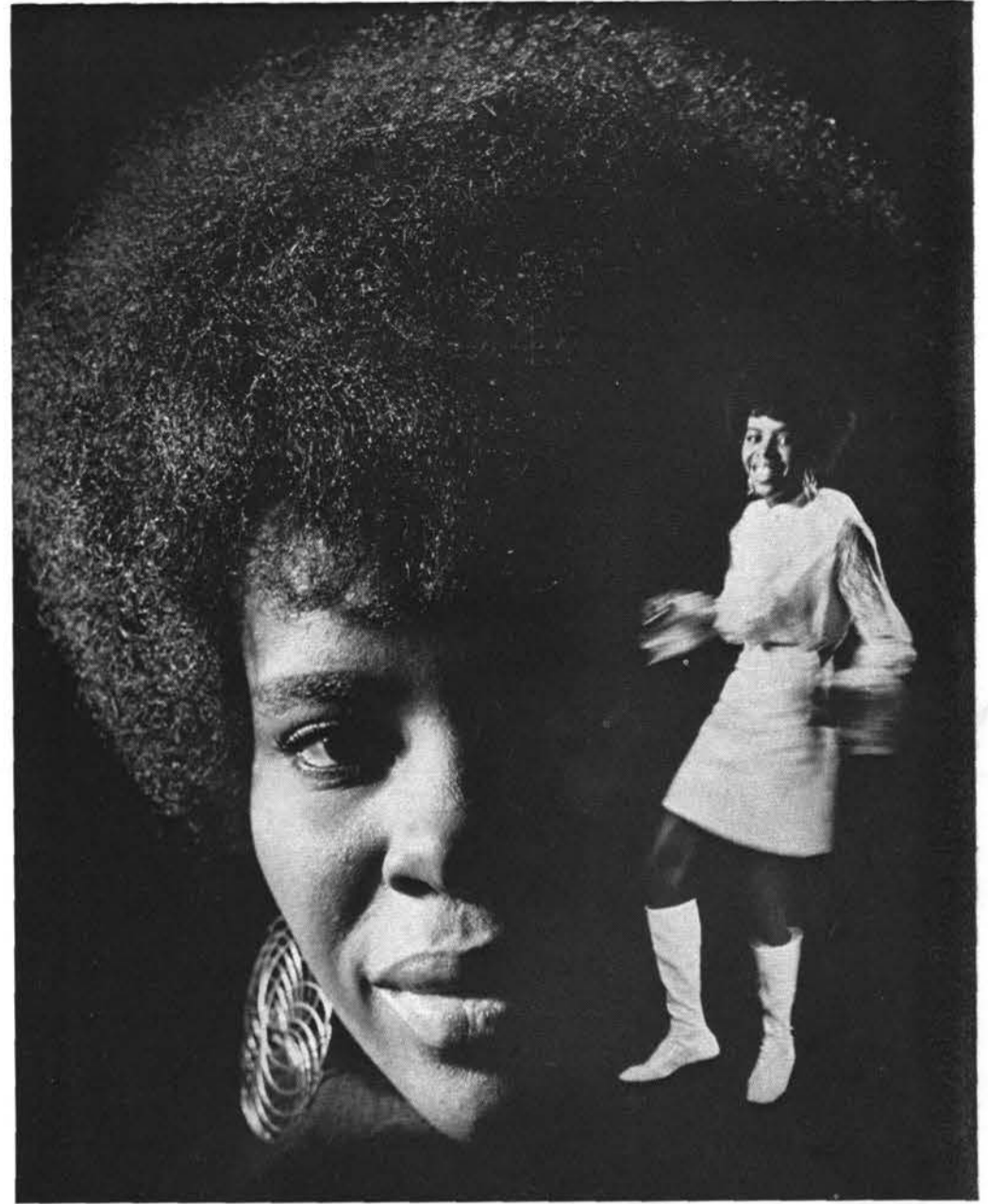
With John's invention, an oscillator can be constructed in modular form with a wide range of frequencies; various output signals are selected merely by changing the reactive network across the oscillator output terminals.

Basically, the oscillator circuit is made up of four transistors and associated resistors. The base electrodes of the first pair of transistors are connected in com-

mon. The second pair of transistors are connected in the emitter-follower circuit configuration and are adapted to control the conductive states of the other transistors. A reactive network is connected between ground and the base electrodes of the first pair of transistors for the desired oscillator frequency and output signal.

The circuit will produce a high voltage sine wave, a square wave, and an integrated or differentiated output signal.

The circuit works even when it is dipped in liquid nitrogen and then placed in a high temperature oven, and is also relatively unaffected by radiation.



SOUL SESSION tomorrow night from 8 to 12 p.m. at the Coronado Club will feature the big rock sounds of Rod King and the Knights. Free to members (guests, 50 cents), the event will also feature social hour prices all evening. Rosie Jennings (4333) extends a cordial invitation to attend.

SAFETY

is being sure the only thing loaded is your gun.



"SAFETY IS..." a number of things to Cliff Pecha (4513), left, and Felix Padilla (4516) who created the campaign for the Organization 4500 safety program. Both men work on the idea, Felix does the cartoon, Cliff does the lettering and silk screening. The signs are displayed in 4500 work areas, changed each month with a new "Safety Is" slogan.

Supervisory Appointment



FRED BLOTTNER to supervisor, Numerical Fluid Dynamics Division 9343, effective Nov. 1.

Fred first joined Sandia in 1954 and worked in an analytical aerodynamics division doing research on hypersonic flow phenomena. After five years, he returned to graduate school. In 1966 he was rehired at the Laboratories and worked in the Aerodynamics Research Division where he was responsible for setting up numerical codes for boundary layer equations. Since then, the division has been incorporated into the Aerothermodynamics Department where Fred has been until his present promotion.

Before returning to Sandia, Fred worked four years for the GE Space Sciences Laboratory in Pennsylvania.

Fred has a BS in aeronautical engineering and an MS in engineering mechanics from the Virginia Polytechnic Institute and a PhD in engineering mechanics from Stanford University.

He is a member of the American Institute of Aeronautics and Astronautics and the American Physical Society.

Fred, his wife Myra, and their two children live at 8510 Harwood NE.

Events Calendar

- Nov. 21—Community Concert presents Simon Estes, bass baritone. UNM Popejoy Hall.
- Nov. 23—Hike to mesa in Algodones area overlooking the Rio Grande. N.M. Mountain Club, leader Mary Martinez, tel. 268-5420.
- Nov. 23—Neo-Classical Jazz Quintet. Old Town Studio, 1208 Rio Grande NW.
- Nov. 29—Snowshoe trip from top of Santa Fe ski lift to Lake Peak. N.M. Mountain Club, leader Harry Wyeth, tel. 299-1327.